

# PATENT SPECIFICATION



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240,263

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## PROVISIONAL SPECIFICATION.

### Improvements in and relating to Disintegrator Machines.

I, STEPHEN NEWCOMBE WELLINGTON, of 53, Victoria Street, Westminster, S.W. 1, Consulting Engineer, British, do hereby declare the nature of this invention to be as follows:—

This invention relates to disintegrating machines and especially to a machine for disintegrating and shredding town's refuse which, owing to its varied composition is not susceptible to ordinary disintegration between rollers or jaws of well known disintegrator or crushing machines. The object of this invention is to tear or shred as well as crush the material by means of a number of cast steel or other suitable metal cutters mounted on a series—preferably three—steel shafts or axles of square section with round bearing ends. The cutters are preferably shaped in the form of battle axes, each cutter consisting of two or more of these battle axes cast in one circular piece and forming a circular cutter. The cutters, with regard to the shape of the battle axes may vary in width and depth and have one or more cutting edges formed on the faces of the cutter heads. The diameters of one set of cutters on any shaft or axle may vary in respect to any shaft or axle or adjacent shaft or axle. The cutters on their respective shafts or axles revolve in opposite directions as to their cutting action, so as to cause a tearing or shredding of any fibrous material fed to the machine. Further the angles of the cutting edges of respective sets of cutters on one or more shafts or axles may be varied as to those on the same or on adjacent shafts or axles. All the shafts or axles containing the cutters revolve in one direction, either clockwise or anti-clockwise and in either direction of motion the machine will function. In addition, there are alternatively disposed on the several shafts or axles a series

of cast steel or other suitable metal spacing rings, either flat or grooved, which act both as distance pieces and crushers during rotation. The metal spacing rings serve also to maintain the cutters in the relative and correct positions on the several shafts or axles, so as to offer definite clearances. Further, metal spacing rings of varying diameters and widths may be substituted from time to time to permit of greater or less clearance when and as desired. The before mentioned shafts or axles carrying the cutters and spacing rings are mounted in sets of two or more in suitable bearings which in turn are attached to a strong metal box shaped frame wherein the cutters and spacing rings operate. The said shafts or axles project outside the box shaped frame on both sides and affixed to each shaft or axle at both ends of same are metal disc wheels (six for three cutter shafts or axles) provided with cranks and crank pins and attached to the latter are two connecting rods of mild steel or other suitable metal, one on each side of the machine. One end pair of metal disc wheels is provided with teeth on the periphery of each wheel which engage with the teeth of a small pinion driver wheel carried on a counter shaft attached to the frame of the machine. There may be two pinion driver wheels or only one on the said counter shaft. The counter shaft carries a pulley wheel which is driven by an electric motor or other source of power. On the top of the box shaped metal frame, at either end, are fitted removable bars of steel, the said bars are bent at a suitable angle over the edges of the box shaped frame and depend between any two cutters so as to prevent the material in the upper part of the machine passing over the end sets of cutters without being disintegrated. The, before

as it passes from the cutters on the one shaft to those on the other, is acted on progressively.

My invention is distinguished by the following characteristic advantages from other constructions of disintegrators already proposed, *viz.* :—

(1). The machine acts as a screen, determining the size of the disintegrated pieces that are allowed to pass through it to the discharge opening. This is effected by the overlapping in plan of the cutter blades, and the width and diameter of the interposed metal rings, both of which dimensions may be varied in accordance with the ultimate size of the pieces that are to pass the machine.

(2) The razor-like edges provided upon the cutting blades and arms given a true and clean cutting action, even if highly resistant materials are encountered, and the power necessary to drive the machine is thus minimized.

(3) As the whole of the cutters are at one time rotating in the same direction (clockwise or counter-clockwise) the "bite" between coacting cutters is automatically cleared of obstructing material, instead of tending to jamming, as would be the case if the cutters on adjacent shafts rotated towards each other in the same direction.

(4). The use of square shafts and corresponding square holes in the bosses of the cutters does away with the necessity for key-ways and keys which are liable to be ineffective in machines of this class subjected to heavy stresses.

Having now particularly described and

ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. In a machine for disintegrating town's refuse and other materials, providing interengaging cutters mounted upon three or more parallel shafts all rotating in the same direction—either clockwise or anti-clockwise—as described and for the purposes specified.

2. In a machine as claimed in Claim 1, arranging the cutters and interposed metal rings so as to constitute a screen which determines the size of the disintegrated material that is allowed to pass the machine, substantially as described and shown on the accompanying drawings.

3. In a machine as claimed in Claim 1, forming the cutters substantially as described and shown in Figs. 5, 6 & 7 of the accompanying drawings.

4. In a machine as claimed in Claim 1, the arrangement of the driving transmission gearing and coupling rods substantially as described and shown on the accompanying drawings.

5. In a machine as claimed in Claim 1, mounting the separate cutters and interposed metal rings on shafts of square section substantially as described.

6. A disintegrating machine constructed, arranged and operating substantially as described and shown on the accompanying drawings.

Dated the 18th day of April, 1925.

STEPHEN NEWCOMBE  
WELLINGTON.

[This Drawing is a reproduction of the Original on a reduced scale.]

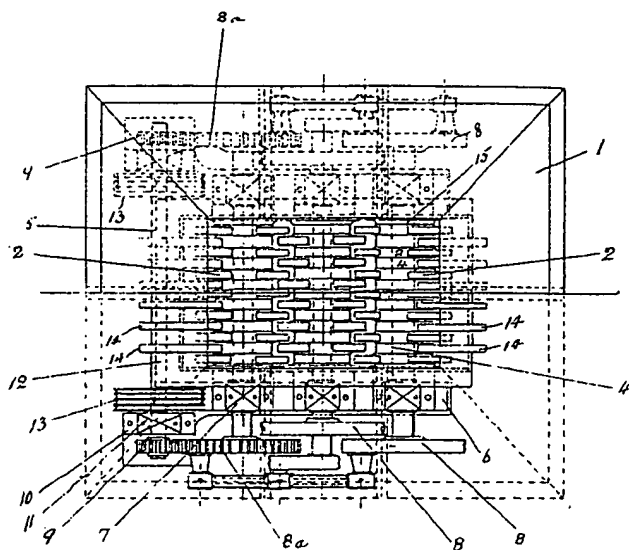


Fig 1

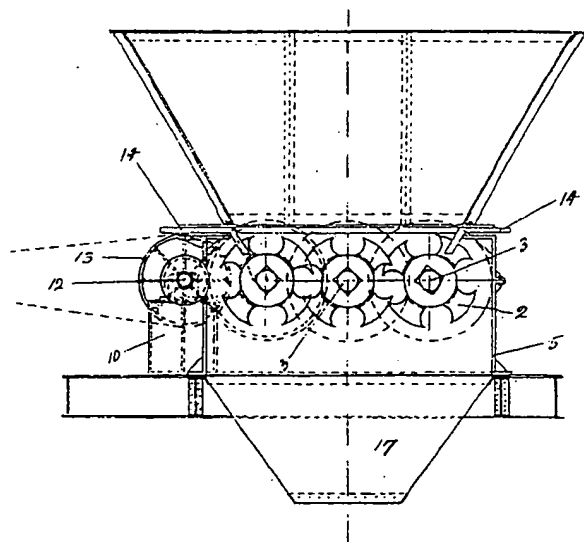


Fig 2

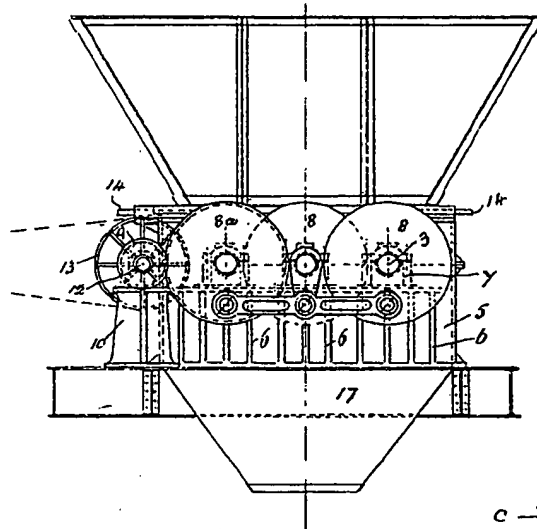


Fig. 3

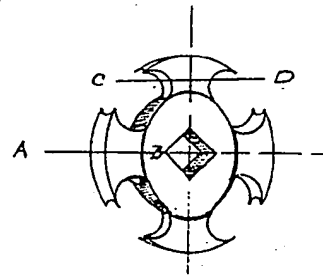


Fig. 5

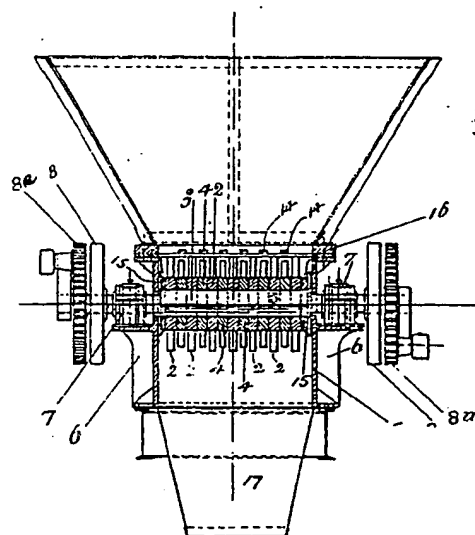


Fig. 4

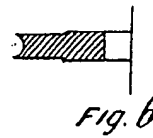


Fig. 6



Fig. 7

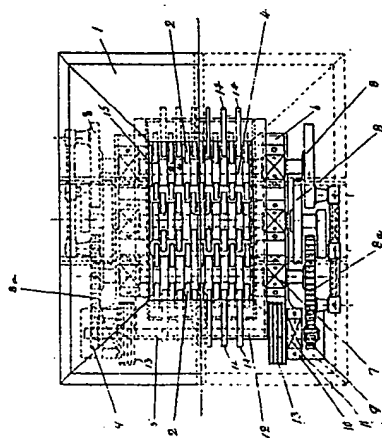


Fig. 1.

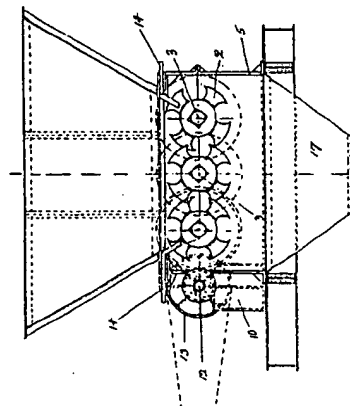


Fig. 2

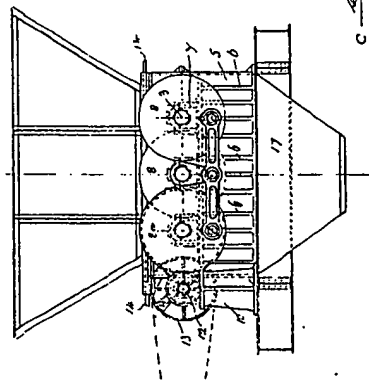


Fig. 3

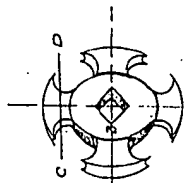


Fig. 5

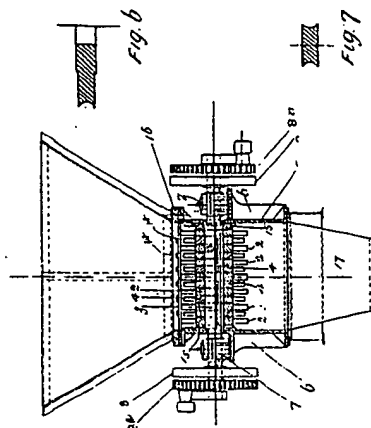


Fig. 4



Fig. 6



Fig. 7

[This Drawing is a reproduction of the Original on a reduced scale]